Our study in a unique way tested successively reduced datasets 1–4 in a systematic attempt to avoid various biases which might impair statistical assumptions of independence. However, with the exception of *A. flavicollis* (between Dataset 1 and 2), our results did not change considerably in this process which may indicate that such analyses are rather robust against well-known potential biases such as trap addiction, determent, attraction, etc. At any rate, we suggest that this type of approach may be explored in further detail, analysing the effects of various biases to small mammal trapping data.

In conclusion, our results show that, at least temporarily, a few small mammal species utilize the vertical space considerably or even entirely and that most species do it at least occassionally, and that this also applies to other than woody habitats. Especially *M. minutus* and *A. flavicollis* catches may, in many situations, be greatly enhanced by trapping at above soil surface levels.

Acknowledgements

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Zusammenfassung

Ausnutzung höherer Vegetationsstrata durch Kleinsäuger in gemischten Ackerland-Habitaten

Im September 1998 wurde die Ausnutzung höherer Vegetationsstrata durch Kleinsäuger in Kraut- und Strauchvegetation in einem standardisierten Feldexperiment untersucht und quantifiziert. Das Experiment wurde mit Hilfe von paarweise kombinierten Fallen am Boden und in der Höhe von 0,5 m in einem typischen dänischen Ackerland in Kolindsund, Jütland, durchgeführt. In 776 Fallennächten wurden bei 409 Fängen sieben Kleinsäugerarten in den Fallen gefangen. Aktivität in der Höhe von 0,5 m war bei *Micromys minutus* und *Apodemus flavicollis* erheblich, während *Clethrionomys glareolus*, *Sorex minutus* und *Sorex araneus* die oberen Vegetationsschichten in geringerem Ausmaß nutzten. *Microtus agrestis* und *Apodemus sylvaticus* wurden nur in den Bodenfallen gefangen. Unsere Ergebnisse zeigen, daß bei niedrigen und mäßigen Dichten das Vorkommen von z. B. *M. minutus* von einem gewöhnlichen Bodenfallengitter unterschätzt oder vollkommen übersehen werden kann. Daher muß man auch bei Studien der meisten anderen Kleinsäugerarten diese Aktivität in oberen Schichten berücksichtigten.

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Original investigation

Description, taxonomy, and distribution of *Talpa davidiana*

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Abstract

The type of *Talpa streeti* is shown to be cranially very close to and thus probably conspecific with *Scaptochirus davidianus*, a little known mole described from the border between "Syria and Asia Minor". The pelvis of *T. davidiana* is of caecoidal type, thus disproving any relationship between this species and *Scaptochirus moschatus* from China. This species is known from two localities in Iran (Kurdistan) and from three regions in Turkey: vicinity of Meydanekbez, Hakkari and Tatvan. Around Tatvan, *T. davidiana* is sympatric with *T. levantis*. Specimens of *T. davidiana* from Iran and Hakkari have a complete dental complement of 44 teeth. Due to the absence of lower incisors and the peglike premolars, this number is reduced to 38 in three moles from Tatvan and to 39 (asymmetry) in the type of *S. davidianus*.

Key words: *Scaptochirus davidianus*, *Talpa streeti*, taxonomy, nomenclature, distribution

Introduction

Milne-Edwards (1884) named and described *Scaptochirus davidianus* from a specimen collected in the environs of Akbès at the border between "Syria and Asia Minor". This taxon remains as one of the least known among mammals of the Western Palaearctic fauna. Ellerman and Morrison-Scott (1966) consider it as a synonym of *Talpa caeca* Savi, 1822, a statement accepted by Doğramaci (1988, 1989 a) and, with reservations, by Corbet (1978). Similarly, Demirsoy (1996) reported on it as *T. levantis davidianus*, giving Gaziantep as the type locality.

In 1965 Lay described a new mole *Talpa streeti* from Kurdistan province, north-western Iran. This mole is cranially so well characterised that its specific status was never questioned (Corbet 1978; Corbet and Hill 1980, 1986, 1991; Honacki et al. 1982; Hutterer 1993). Known at first only from its type locality (Lay 1967), *T. streeti* was later also reported for Turkey (Doğramaci 1989 a). Spitzenberger (in Felten et al. 1973) stated that *Scaptochirus davidianus* is a member of the genus *Talpa* and might be either a species on its own or the oldest name for *T. streeti*. Assuming that reports of *T. caeca* for Saqqez by Misonne (1959) and for Tatvan by Osborn (1964) actually refer to *T. davidiana* this would, together with the type locality of *T. streeti*,

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form a plausible distribution area (SPITZENBERGER, in FELTEN et al. 1973). GUREEV (1979) and HUTTERER (1993) gave their opinions about the conspecificity of *T. davidiana* and *T. streeti*, but did not formally synonymise them. STROGANOV (1948) and GRULICH (1982) argued, in contrast, that *S. davidianus* is not a member of the genus *Talpa*, but is closely related to east Asian *S. moschatus* of MILNE-EDWARDS (1867). If this is the case, it would mean that the genus of *Scaptochirus* is disjunct in distribution, with the east Asian species being separated from *S. davidianus* in the Middle East by 5 500 km. Further information on the exact identities of *T. streeti* and *S. davidianus* is thus of importance also from a zoogeographical point of view. Therefore, the aim of this study is to elucidate relations within these little-known moles, to define their geographic range and the extent of cranial and dental variation.

Material and methods

We examined 14 specimens of *T. davidiana*, including the types of *Scaptochirus davidianus* and *Talpa streeti*. For comparative purposes we also included in the analysis 26 museum specimens of *Talpa levantis* Thomas, 1906 from Turkey and Iran, three *T. romana* from Italy and 32 *T. stankovici* from Federal Republic of Yugoslavia and from Macedonia. Specimens were mainly skins and skulls, but in some cases also hip bones.

Specimens examined (14). – Iran: Kurdistan, Hezar Darreh (FMNH 96424, type of *Talpa streeti*; FMNH 96421, 96423, 96425); Kurdistan, 1 mile south of Divandarreh (FMNH 111007). Turkey: Bitlis, Tatvan, Kurtikan (FMNH 82136, 82137); Tatvan (OMU 167); Hakkari, Mergan Zoma in Cilo-Sat-Mts. (NMW 20326, 20327); Hakkari, Megabuti yaylası (OMU 231); Hakkari, Otluca köyü (OMU 166, 232); Meydanekbez (MNHN 1883-469; type of *Scaptochirus davidianus*).

Material examined from other species. – *Talpa levantis* (26) Iran: Ghilan, 12 km W Chalus (FMNH 96416, 96417, 96418, 96419). Turkey: Trabzon, Çosandere (BMNH 6.5.1.1, 6.5.1.2, 6.5.1.3, 6.5.1.4); Trabzon, Euthey (BMNH 6.3.6.6); Trabzon, Meryemana (BMNH 6.3.6.4; NMNH 327252, 327253); Trabzon, Altindere (BMNH 25.11.1991, the type *Talpa caeca levantis*); Giresun, Bicik, Yavuz-Kemal (NMW 19859); Ordu, Ulubey (NMW 19858); Samsun, Kürtler (PMS 10299); Tamdere, Giresun Dağları, Şehitlor Geçidi (PMS 11372); Bitlis, Tatvan (OMU 233, 234, 236, 237, 238, 239, 240, 241, 242). *Talpa romana* (3) Italy: Napoli, Roccarainola (PMS 6710, 6711); Quindici, Avellino (PMS 6712). *Talpa stankovici* (32) Macedonia: Mt. Bistra (PMS 2441, 9211, 9532, 7497); Mt. Pelister (PMS 9541); Bitola (PMS 7490); Prilep (PMS 7486, 7488, 7521); Resen (PMS 7522, 7505, 7506, 7508); Mt. Šara (PMS 7496); Struga (PMS 7494, 7495); Mt. Galičica (PMS 7492, 7493, 7502). Federal Republic of Yugoslavia: Ulcinj (PMS 3202-3204, 8834-8839, 7500, 7501).

Seven linear measurements were taken from each skull with a vernier calliper (accurate to the nearest 0.1 mm). Their abbreviations are: CbL – condylobasal length, MxT – maxillary tooth-row length (C – M3), BcB – braincase breadth, BcH – braincase height (without bullae), RoC – breadth of rostrum over canines, RoM – breadth of rostrum over molars, MdL – length of mandible. External measurements were deduced from specimen labels: H & B – head and body length, TL – tail length, HF – hind foot length, W – weight. All measurements are in mm, weight in grams. Overall cranial similarity was assessed by Principal Components Analysis (PCA) of the correlation matrix of log transformed measurements. Factor loadings were subjected to Varimax rotation. Statistical analyses were performed using STATISTICA analysis system (Release 5.5 '99).

Types of teeth are indicated by letters; capitals indicate upper teeth and small letters indicate lower teeth: I/i – incisors, C/c – canines, P/p – premolars, M/m – molars. The number denotes the position of a particular tooth in the tooth row.

The following abbreviations were used for collections: FMNH – Field Museum of Natural History, Chicago; MHNP – Muséum National d'Histoire Naturelle, Paris; NMW – Naturhistorisches Museum Wien, Vienna; OMU – Zoological collection of the Ondokuz Mayis University, Samsun; BMNH – Natural History Museum London; PMS – Slovenian Museum of Natural History, Ljubljana.

Results and discussion

Craniometrics

T. davidiana is well defined amongst the moles of the Western Palaearctic region by its robust rostrum, a feature best expressed by the breadth across canines (Fig. 1). The

type of *S. davidianus* certainly has nothing in common with the small blind moles of Turkey, traditionally reported on as *T. caeca* (Osborn 1964; Doğramaci 1989 a), but actually representing an independent species, *T. levantis* (Kefelioğlu and Gençoğlu 1996). Lay (1965) considered two specimens from Tatvan, Turkey (FMNH 82136 and 82137) to be *T. caeca.* In spite of their small size (see Tab. 1) and somewhat aberrant dentition, they resemble the type of *S. davidianus* in all other respects. Doğramaci (1988) reported *Talpa caeca* davidianus for Tatvan, however, later on (Doğramaci 1989 a) reported *T. caeca* for Tatvan and *T. streeti* for Hakkari, south-eastern Turkey. It is therefore not exactly clear what Doğramaci (1988) understood as *T. caeca davidianus.* As is clear from the available material (Fig. 1), the Tatvan area is inhabited by two moles: *T. levantis* and *T. davidiana.* In the subsequent text, when we refer to Tatvan moles, we have in mind those having the cranial morphology of *T. davidiana* and not of *T. levantis.* Moles from the Hakkari region are indistinguishable from the type and topotypes of *T. streeti*; they also resemble the type of *S. davidianus*, but are of larger size.

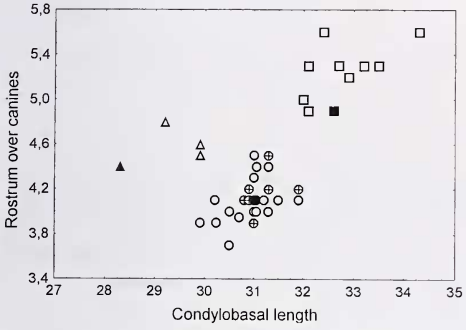

Fig. 1. Plot of rostral breadth over canines against condylobasal length of skull in *T. streeti* from Iran and Hakkari (diamonds), moles from Tatvan (empty triangles), type of *S. davidianus* (closed triangle) and *T. levantis* (circles). Types are indicated by closed symbols. *T. levantis* from Tatvan is indicated by crosses.

Projection of specimens onto the first two Principal Components (85.7% of the variance explained) clustered groups according to their previous taxonomic assignment and geographic origin (Fig. 2). Principal Component 1 (PC1) with high character loadings for CbL, MxT, and MdL, was evidently a factor of general size, which is a common phenomenon in mammalian morphometrics (Lemen 1983) – of more interest was the grouping along Principal Component 2 (high loadings for RoC and RoM). Therefore, the close cranial similarity of *S. davidianus* and *T. streeti* is beyond doubt. Again, moles from Tatvan were placed within the *T. davidiana* cluster. Interlocality variation in size was more strongly ex-

Table 1. External and cranial dimensions in *T. davidiana* from Turkey and Iran. See list of specimens for their geographic origin.

Coll. & No.	Sex	H & B	TL	HF	W	CbL	MxT	BcB	BcH	RoC	RoM	MdL
FMNH 96424	Male					32.6	12.6	16.4	9.5	4.9	9.6	22.2
FMNH 96421	Male					32.0	12.8	16.7	8.8	5.0	10.1	21.4
FMNH 96423	Male					33.2	12.9	16.9	9.5	5.3	10.4	22.3
FMNH 96425	?					32.1	12.1	16.6	9.0	4.9	10.0	21.8
FMNH 111007	Male					34.3	13.2	18.0	9.8	5.6	10.8	22.8
FMNH 82136	Female	128	18	18		29.9	11.3		8.6	4.5	8.9	19.7
FMNH 82137	Female	129	20	18		29.9	11.3	14.9	8.6	4.6	9.0	19.7
OMU 166	Male			21	76	32.4	12.5	16.3	8.8	5.6	10.7	21.6
OMU 167	Female					29.2	10.8	15.3	9.0	4.8	9.7	19.9
OMU 231	Male	130	29	20	80	32.1	12.3	16.6	9.4	5.3	9.9	21.5
OMU 232	Female	134	30	20	79	32.9	13.0	16.0	9.5	5.2	9.8	22.2
NMW 20326	Male	127	27	18	75	33.5	13.2	17.1	9.4	5.3	9.8	22.5
NMW 20327	Female	130	25	17.8	61.5	32.7	12.0	16.3	9.1	5.3	9.9	22.1
MNHN 1883-469	Male	120	20			28.3	10.6	14.0	8.0	4.4	8.1	19.3

Table 2. Variation in number of teeth in *T. davidiana* from Turkey and Iran. First row gives complete dental set in *Talpa*. (N) – number of specimens examined. See text for explanation of abbreviations.

* One specimen with three premolars on the right side.

	(N)	I	C	P	M	i	c	p	m	Total
Talpa		3	1	4	3	3	1	4	3	44
Iran	(4)	3	1	4	3	3	1	4	3	44
Hakkari	(5)	3	1	4	3	3	1	4*	3	44
Tatvan	(3)	3	1	3	3	2	1	3	3	38
Meydanekbes	(1)	3	1	3	3	2/3	1	3	3	39

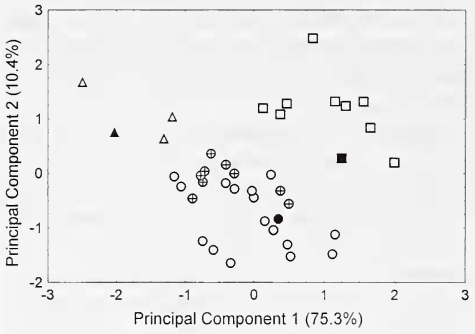

Fig. 2. Projection of specimens onto the first two principal components (percentage of variance in parentheses). For symbols see Fig. 1.

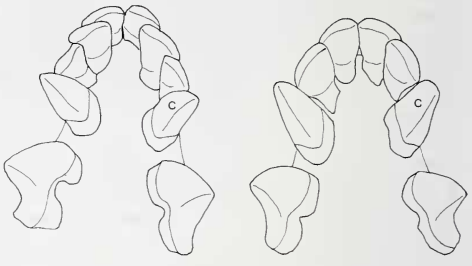

Fig. 3. Variability in the number of lower incisors in *T. davidiana*. Left – complete set with crowded incisors in a mole from Hakkari (NMW 20326); right – only two incisors on each side in a mole from Tatvan (FMNH 82137). c – lower canine. Not to same scale.

pressed in *T. streeti* than in *T. levantis*, although the latter originated from a much wider geographical range.

Dentition

As mentioned by LAY (1965), the type of *T. streeti* displays the complete dental set of the genus *Talpa* (i. e. 44 teeth) but this number is reduced to 38 in the three moles from Tatvan (Tab. 2). Reduction affects both the upper and lower premolars, a condition also found in the type of *S. davidianus*. In the type and topotypes of *T. streeti*, sub-equal and peglike P2 and P3 are smaller than P1. Moles from Tatvan and the type *S. davidianus* had lost one small premolar; the two remaining premolars between the upper canine and P4 are peglike and of approximately the same size. Between the caniniform p1 and large p4, *T. streeti* has two sub-equal peglike premolars; again, one of them is lost in the moles from Tatvan, and in the type *S. davidianus*, which result in an increase in the size of the remaining premolar. ZIEGLER (1971) stated that in *Talpa* s. l. the first peglike premolar lost from a row is the anterior one. Consequently, the moles from Tatvan and the type of *S. davidianus* most likely lack both the p2 and P2.

All three specimens from Tatvan are unique in having only two lower incisors. The lower incisors are evidently crowded in *T. davidiana* from Hakkari and in the topotypes of *T. streeti*, a condition which possibly resulted in the loss of i3 (Fig. 3). The type specimen *S. davidianus* has 39 teeth with three incisors in the left mandible and two in the right.

Pelvis

GRULICH (1971) reported on a mogerid hip bone (with the 5th sacral foramen closed posteriorly by a bony bridge) in *S. moschatus* and presumed such a condition also existed in *S. davidianus* (GRULICH 1982).

However, Doğramaci (1989 b) demonstrated that *T. streeti* from Hakkari lacks a bony bridge posterior to the 5th sacral foramen, having also the 4th sacral foramen opened posteriorly (caecoidal pelvis). Furthermore, we examined five hip bones from *T. davidiana* (Iran – 1, Tatvan – 1, Hakkari – 3) and all were of caecoidal morphology. Thus, according to the morphology of the pelvis, *T. davidiana* is close to the genus *Talpa* from the western Palaearctic, having nothing in common with *Scaptochirus moschatus*.

Taxonomy

Milne-Edwards (1884) based his description of *S. davidianus* on the reduced number of teeth: 3/3, 1/1, 3/3, 3/3 = 40, although a higher number was mentioned in the original description of *S. moschatus*: "Inc. 3/4 can. 1/1 prem. 2/2 mol. 4/4" i. e. 42 teeth (Milne-Edwards 1867). Fourty teeth have been cited as diagnostic of the genus *Scaptochirus* by most subsequent authors (Stroganov 1948; Stein 1960; Gureev 1979; Grulich 1982; Niethammer and Krapp 1990). The usefulness of dental formulas in generic diagnostics within the Talpinae, and particularly in the *Talpa* group, continues to be a matter of debate. Schwarz (1948) considered that the number of genera based on dental formulas is grossly exaggerated, an opinion shared by Ellerman and Morrison-Scott (1951) and Corbet (1978). Corbet (1978) also concluded that genera based on dental formulas may cut across other cranial differences.

Oligodonties are fairly common within *Talpa* s. l. (as defined by Schwartz 1948). The following teeth are prone to reduction or complete loss: i3, p2, p3, P2, and P3 (Ziegler 1971). Oligodonties appear to increase in frequency across the Western Palaearctic (oligodonties rare) into the Oriental region (oligodonties frequent; see Ziegler 1971). The reduction or complete loss of i3 is present in *Euroscaptor micrura*, *E. longirostris*, and *Parascaptor leucura* (generic assignments are by Hutterer 1993). It is evident from Stroganov (1948) that i3 is also missing in *Mogera robusta*; Gureev (1979) however, explained this as a missing canine. An extreme loss of the premolars is seen in *Euroscaptor*, which lacks all four peglike premolars (i. e. p2, p3, P2, P3; Ziegler 1971).

Among *Talpa* s. str. from the Western Palaearctic with 44 teeth, i. e., with the conservative dental formula of the primitive extant eutherians (Ziegler 1971), oligodonties are not as common. In 8184 *T. europaea* skulls examined by Stein (1963) only 0.3% lacked at least one peglike premolar in the upper, and 0.6% in the lower jaws. In a smaller sample (N = 464) from the Netherlands, Niethammer (1990 a) found 5.6% of the specimens were missing one or more premolars. Loss of premolars was also recorded in *T. occidentalis* (incidence 3.3%; Niethammer 1990 b), but not in *T. caeca* (Niethammer 1990 c) and *T. stankovici* (Niethammer 1990 d; specimens in PMS). A high share of oligodonties was reported in *T. romana* (Capolongo and Panasci 1978): 36.5% of moles lacked between one and four upper premolars (N = 255); in three geographic samples, the share of oligodontic moles varied between 14% and 51%. Loss of the two peglike premolars was common in *T. romana*, and found in 21.5% of moles on average. Ziegler (1971) also recorded a reduction of i3 in *T. romana*, in addition to missing of P2. Assuming that electrophoretic divergences reflect actual evolutionary relations amongst European moles (Filippucci et al. 1987) one would not expect any phylogenetic background to oligodonties. Moreover, Miller (1940) expressed surprise that teeth of such a small size and apparent mechanical unimportance as the peglike premolars are so constant in most moles.

Stein (1963) showed that oligodonties in *T. europaea* are more likely to occur in smaller skulls. In our case, a complete dental set was recorded only in the largest moles. Thus, 38 teeth, as observed in moles from Tatvan, are possibly just a case of extreme oligodonty and a by-product of size reduction in marginal populations of *T. davidiana*. Although this feature is unique within *Talpa* s. str., it is supposedly of no taxonomic significance; the asymmetry in

the number of lower incisors (as seen in the type of *S. davidianus*) demonstrates that the presence of the small incisor is not stable.
In conclusion, the most parsimonious taxonomy is recognition of a single, although highly variable species *T. davidiana*, with *T. streeti* as its junior synonym. Furthermore, the caecoidal pelvis suggests their inclusion in the genus *Talpa* not *Scaptochirus*. The latter is thus a monotypic genus, in distribution restricted to east Asia.

Talpa davidiana

1884. *Scaptochirus davidianus* Milne-Edwards, Compt. Rend. Acad. Sci., Paris, 99: 1141, December 29. Type locality – vicinity of Akbès on the border between Syria and Asia Minor ("environs d'Akbès, sur les confins de la Syrie et de l'Asie Mineure") = Meydanekbez (also Meydanı Akbes or Meydān Ikbis), southwest of Gaziantep, Turkey (see SPITZENBERGER in FELTEN et al. 1973).
1965. *Talpa streeti* Lay, Fieldiana Zool., 24: 227, 22 October. Type locality – Hezar Darreh, Kurdistan, Iran.
1967. *Talpa streetorum* Lay, Fieldiana Zool., 54: 131, October 1967. Unjustified emendation of *T. streeti* (see CORBET 1978).

Amended diagnosis: A mole with a caecoidal pelvis. Rostrum is broader and heavier than in any other *Talpa* species (*T. romana* and *T. stankovici*) with the broadest rostrum of the European moles (Fig. 4). Rostrum remains robust also across canines while it is slim in this region in other west Palearctic *Talpa*. Tail is shorter than in any other west Palaearctic mole (Fig. 5). *T. davidiana* is more inclined towards oligodonties than any other species of the genus *Talpa* s. str. Comparison of this species (under

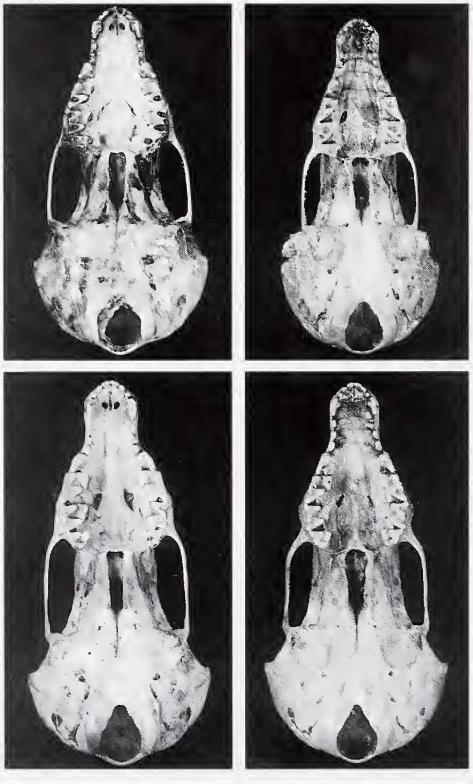

Fig. 4. Ventral side of skull in (top left) *T. davidiana* (OMU 267), (top right) *T. levantis* (PMS 10299), (bottom left) *T. romana* (PMS 6710), and (bottom right) *T. stankovici* (PMS 2441).

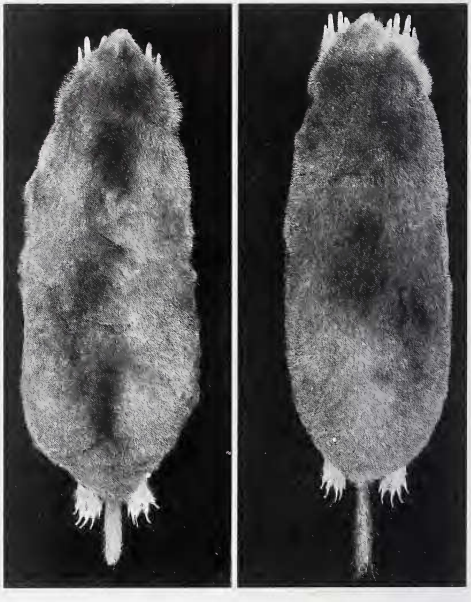

Fig. 5. Skins of *T. davidiana* (left) and *T. levantis* (right), both from Tatvan; note the shorter tail in *T. davidiana*.

the name *T. streeti*) with other moles was provided by Lay (1965).

Homonymy: The binomen *Scaptochirus davidianus* was used for the first time by Swinhoe (1870 a) in his list of Chinese mammals. As already pointed out by Ellerman and Morrison-Scott (1951) this is evidently a case of accidental renaming of *S. moschatus*. Although Swinhoe (1870 a) used the name *S. davidianus*, he simultaneously refers to the original description of *S. moschatus*: "(Annales des Sciences Nat. 5e série, t. 7), anteà, p. 450." and also credits Milne-Edwards with authorship. From one of his earlier publications in the same volume of the Proceedings of the Zoological Society (Swinhoe 1870 b) it is also clear that Swinhoe was familiar with the description of *S. moschatus* by Milne-Edwards. The introduction of *S. davidianus* by Swinhoe was simply an error which, however, coincided with the name proposed by Milne-Edwards (1884) – fourteen years after Swinhoe's study was published. If one considers *S. davidianus* Swinhoe, 1870 and *S. davidianus* Milne-Edwards, 1884 as homonyms, then the former is a nomen oblitum as it has never been used as a valid name (International Commission of Zoological Nomenclature 1999, Article 23.9).

Distribution: Range is summarised in figure 6. The largest distance between extreme localities is >800 km in a west – east direction and up to 400 km in a north – south direction. This range is comparable in size with those of some of the blind *Talpa* species with caecoidal pelvis: *T. occidentalis*, *T. romana*, *T. stankovici* (Mitchell Jones et al. 1999) and *T. caucasica* (Sokolov and Tembotov 1989). All the records are from the southern margin of the Anatolian – Iranian high plateau.

Specimens were apparently always collected at high altitudes (around 2 000 m a. s. l.), however, very few facts are available. Habitat is little known; two specimens from Tatvan were collected from burrows in a hayfield, whilst those from Mergan Zoma are from alpine meadows at 2 400 m a. s. l. (for a photograph of the habitat see Spitzenberger 1976).

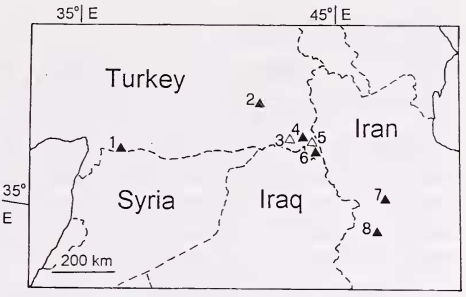

Fig. 6. Distributional records of *T. davidiana*. Turkey: 1 – Meydanekbes; 2 – Tatvan; 3 – Hakkari, Mezralar (1 800 m a. s. l.); Megabuti yaylası (3 700 m a. s. l.); 4 – Mergan Zoma in Cilo-Sat-Mts. (2 400 m a. s. l.); 5 – Hakkari, Otluca köyü (2 000 m a. s. l.); 6 – Yüksekova. Iran: 7 – l mi south of Divandarreh; 8 – Hezar Darreh. Localities 3 and 5 are based on Doğramaci (1989 a).

Meydanekbes seems anomalous from the point of view of both altitude and habitat, and we doubt whether the environs of the town of Meydanekbes are a suitable habitat for the burrowing mole. This specimen might originate from the mountains, either to the north (e. g. Engizek Dağı with the peak of 2 814 m a. s. l.; ca. 80 km away) or to the west of Meydanekbes (Bozdağ, highest peak 2 240 m; ca. 90 km away).

Sympatry: *T. davidiana* is the southemmost member of its genus, being allopatric throughout the major part of its little known range. The only known incidence of sympatry is from Tatvan. where *T. levantis* was also collected.

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